

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

**Complete if Known**

Application Number	
Filing Date	September 9, 2003
First Named Inventor	David L. Neary
Art Unit	
Examiner Name	
Attorney Docket Number	

Sheet 1 of 2

**U. S. PATENT DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code <sup>2</sup> (if known)			
		US- 5,114,440	05/19/1992	Reis	See Attachment
		US- 5,538,544	07/23/1996	Nowobilski et al.	See Attachment
		US- 5,656,068	08/12/1997	Smolarek et al	See Attachment
		US- 5,658,371	08/19, 1997	Smolarek et al	See Attachment
		US- 5,674,311	10/07/1997	Notaro et al.	See Attachment
		US- 5,759,242	06/02/1998	Smolarek al.	See Attachment
		US- 5,964,259	10/12/1999	Ackley et al	See Attachment
		US- 6,334,889 B1	01/01/2002	Smolarek et al.	See Attachment
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			

**FOREIGN PATENT DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T <sup>6</sup>
		Country Code <sup>3</sup> Number <sup>4</sup> Kind Code <sup>5</sup> (if known)				

Examiner  
SignatureDate  
Considered

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

EU826306090US

**Pag 2 Attachm nt to 'INFORMATION DISCLOSURE STATEMENT BY APPLICANT'**  
**(Submitted by David L. N ary on S pt mb r 9, 2003)**

<b>Patent Number</b>	<b>Figure Reference</b>	<b>Stated Objectives</b>	<b>Other References</b>
5,114,440	2	Col. 1 lines 45-49 to discover a process of favorable energy	Col. 1 lines 49-64 detailing VSA approach to satisfy the objective.
5,538,544	1-5	Col. 2 lines 34-36, and 37-40	Col. 2 lines 52-55 to achieve a very uniform gas flow at the gas flow's entrance into the adsorbent bed.
5,656,068	2 and 3	Col. 3 lines 52-54 and 55-59 (lowering VPSA power consumptions)	Col 3 lines 38-51 acknowledging inefficient and uneconomical present art VPSA systems for larger oxygen plant outputs.
		Col. 5 lines 27-30 "power savings of about 20% is contemplated".	Col. 7 lines 8-13 use of radial beds in embodiments of the invention. Col. 10 lines 58 to Col 11 line 5 referencing to advantages of radial-flow beds with vertical adsorbent beds.
5,658,371	8-15	Col. 3 lines 34-36, 37-40, 41-45 (collectively enabling higher efficiencies)	Note: improved scheduling of sequenced steps applies to single conventional vertical vessel beds and employed single compressor for adsorption/desorption.
5,674,311	5	Col. 3 line 11-19 method of selecting adsorbents for multiple thermal levels within conventional VPSA vertical vessels containing deep adsorbent beds.	Col. 2 lines 41-55 outlining the development of thermal gradients across deep adsorbent beds
5,759,242	1-4	Col. 2 lines 28-31, 32-34, 35-38, 39-44 (collectively to reduce required adsorbent material, improve gas flow distribution, and reduce power consumption within conventional vertical vessel VPSA systems).	Col. 2 lines 13-27 describing previous art of employing radial-flow adsorbent beds.
5,964,259	1 & 2	Col. 2 line 42 to 67 (improved method of loading a conventional vertical VPSA adsorber vessel with two or more layers of varied adsorbent materials having radial flows of gases.	Note: complex adsorbent loading arrangement for an internally complex (and expensive) fabricated vessel, said loading and vertical bed heights being not well suited for fragile adsorbent materials. Design is not suited for on-site change-out of adsorbent materials.
6,334,889B1	1 & 2	Col. 4 lines 6-10, and 11-15 (reduction of adsorbent bed fluidization and void space volumes within a typical vertical VPSA adsorber vessel)	

**EU826306090US**